AF/2624

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

DAVID R. THOMAS ET AL.

Serial No. 09/315,247 (TI-26270)

Filed May 22, 1999

For: A METHOD AND APPARATUS FOR GENERATING VIDEO IMAGES

Art Unit 2624

Examiner Stephen M. Brinich

Customer No. 23494

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Sir:

BRIEF ON APPEAL

REAL PARTY IN INTEREST

The real party in interest is Texas Instruments Incorporated, a Delaware corporation with offices at 7839 Churchill Way, Dallas, Texas 75251.

RELATED APPEALS AND INTERFERENCES

There are no known related appeals and/or interferences.

STATUS OF CLAIMS

This is an appeal of claims 1, 3 to 8, 10 to 16, 18 to 27 and 29, all of the rejected claims. Please charge any costs to Deposit Account No. 20-0668.

STATUS OF AMENDMENTS

An amendment was not filed after a second or subsequent rejection.

SUMMARY OF INVENTION

The invention relates to a method and system for generating a video image of an object. The method, as demonstrated in Fig. 3 includes the steps of generating video data representing video frames for forming the video image of said object (304) and processing the video data by dividing each video frame into a plurality of regions (306), each region being representative of a portion of the object, at least one of the plurality of regions being a predetermined at least one of the plurality of regions and the other of the plurality of regions being remaining ones of the plurality of regions. The predetermined at least one of the plurality of regions of the video frame is selected (308) and the remaining ones of the plurality of regions of the video frame are de-emphasized (310). Video data indicative of the selected at least predetermined one and the remaining ones of the plurality of regions of the video frames are transmitted to a receiver having a display for displaying the display video image and the regions of each of the video frames are recombined to form a display video (314). The recombining step includes forming the display video image in which the selected region of the video frame is sharp or well-defined and remaining ones of the plurality of regions of the video frame are de-emphasized or blurred in accordance with the relative distance between the portion of the object in a remaining one of the plurality of regions respective region of the object and a reference point.

The step of selecting the region can include selecting a region defining a foreground object or an observer selecting a region of the object or a region of the video frame according to the position of an object relative to at least one other object or a region of the video frame defining an active entity.

The step of dividing said video image into a plurality of regions can include dividing the video image into a plurality of regions each defining a focal plane or dividing the video image into regions wherein each focal plane is representative of a different distance between a respective portion of the object and the reference point.

The step of selecting at least a predetermined one of said plurality of regions can include de-emphasising remaining portions of the video image according to the distance between a respective portion of the object and the reference point or applying greater de-emphasisation to regions of the video image that are representative of portions of the object having a greater distance between the respective portion of the object and the reference point than regions of the video image that are representative of portions of the object having a smaller distance between the respective portion of the object and the reference point.

The step of displaying the video image can include displaying the video frame such that remaining regions of the display video image are less sharp in accordance with the relative distance between the respective portion of the object and the video camera or

The step of generating a sequence of video frames, and said step of displaying said display video image comprises displaying a sequence of video frames.

The step of displaying the video image can include displaying the video frame such that remaining regions of the display video image are less sharp in accordance with the relative distance between the respective portion of the object and the video camera.

ISSUE

T he issue on appeal is whether claims 1, 3 to 8, 10 to 16, 18 to 27 and 29 are patentable over Omura et al. in view of Applicant's Admitted Prior Art (AAPA) under 35 U.S.C. 103(a).

GROUPING OF CLAIMS

The claims do not stand or fall together for reasons set forth hereinbelow under ARGUMENT.

ARGUMENT

Claims 1, 3 to 8, 10 to 16, 18 to 27 and 29 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Omura et al. publication in view of AAPA. The rejection is without merit.

The purpose of the present invention is to provide a method and system for generating an image that is perceived by the observer to be three-dimensional, and in which the accommodation and convergence of the image substantially coincide, thereby alleviating eye strain and fatigue. While Omura et al. appear to be directed to a solution to the same problem, the method and system set forth in Omura et al. has nothing whatsoever to do with the invention as claimed herein. The solution provided by the subject invention is quite simple and entirely different from that of Omura et al. This is broadly stated in the independent claims herein, namely, claims 1 and 16.

Claim 1 requires, among other steps, after generating video data representing video frames for forming the video image of object, processing the video data by first dividing each video frame into a plurality of regions, each region being representative of a portion of the object, at least one of the plurality of regions being predetermined at least one of the plurality of regions and the other of the plurality of regions being remaining ones of the plurality of regions. No such combination of

steps is taught or suggested by Omura et al., AAPA or any proper combination of these references either alone or in the combination as claimed. Nowhere has the examiner demonstrated a reference in which a single frame is divided into a plurality of regions nor has the examiner demonstrated that a single one or ones of the regions being a predetermined region.

Claim 1 still further then requires the step of selecting the predetermined at least one of the plurality of regions of the video frame. No such step is taught or suggested by Omura et al., AAPA or any proper combination of these references either alone or in the combination as claimed.

Claim 1 yet further then requires the step of de-emphasising the remaing ones of the plurality of regions of the video frame. No such step is taught or suggested by Omura et al., AAPA or nay proper combination of these references either alone or in the combination as claimed.

Claim 1 even further requires the step of transmitting video data indicative of the selected at least predetermined one and the remaining ones of the plurality of regions of the video frames to a receiver having a display for displaying the display video image. No such step is taught or suggested by Omura et al., AAPA or any proper combination of these references either alone or in the combination as claimed.

Claim 1 still further requires the step of then recombining the regions of each of the video frames to form a display video, the recombining step comprising forming a display video image in which the selected region of the video frame is sharp or well-defined, and remaining ones of the plurality of regions of the video frame are de-emphasised or blurred in accordance with the relative distance between the portion of said object in a remaining one of the plurality of regions respective region of said object and a reference point. No such step is taught or suggested by Omura et al., AAPA or any proper combination of these references either alone or in the combination as claimed.

The Applicant's Admitted Prior Art, whatever that may be and which is undetermined does not overcome the deficiencies in Omura et al. In fact, the only portion of Omura et al. which appears to be relied upon is Fig. 5(b) to which about 7 lines of text are attributed and which has nothing whatsoever to do with the process as claimed. The mere fact that an object can be viewed in front of a blurred background in no way is a teaching or suggestion of the process claimed.

Claims 3 to 8 and 10 to 15 depend from claim 1 and therefore define patentably over the applied references for at least the reasons presented above with reference to claim 1.

Claim 3 further limits claim 1 by requiring that the step of selecting the region comprise selecting a region defining a foreground object. No such step is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 4 further limits claim 1 by requiring that the step of selecting the region comprise an observer selecting a region of the object. No such step is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 5 further limits claim 1 by requiring that the step of selecting the region comprise selecting a region of the video frame according to the position of an object relative to at least one other object. No such step is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 6 further limits claim 1 by requiring that the step of selecting the region comprises selecting a region of the video frame defining an active entity. No such step is taught or

suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 7 further limits claim 1 by requiring that the step of dividing the video image into a plurality of regions comprises dividing the video image into a plurality of regions each defining a focal plane. No such step is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 8 further limits claim 7 by requiring that the step of dividing the video image into a plurality of regions each defining a focal plane comprise dividing the video image into regions wherein each focal plane is representative of a different distance between a respective portion of the object and the reference point. No such step is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 10 further limits claim 1 by requiring that the step of selecting at least a predetermined one of the plurality of regions comprise de-emphasising remaining portions of the video image according to the distance between a respective portion of the object and the reference point. No such step is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 11 further limits claim 10 by requiring that the step of de-emphasising remaining portions of said video image comprise applying greater de-emphasisation to regions of the video image that are representative of portions of the object having a greater distance between the respective portion of the object and the reference point than regions of the video image that are representative of portions of the object having a smaller distance between the respective portion

of the object and the reference point. No such step is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 12 further limits claim 1 by requiring the step of artificially generating each remaining region of the video image. No such step is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 13 further limits claim 1 by requiring that the step of generating video data comprise monitoring an object with a video camera to produce one or more video frames. No such step is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 14 further limits claim 13 by requiring that the step of displaying the video image comprise displaying said video frame such that remaining regions of the display video image are less sharp in accordance with the relative distance between the respective portion of the object and the video camera. No such step is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 15 further limits claim 1 by requiring that the step of generating video data comprise generating a sequence of video frames, and the step of displaying the display video image comprises displaying a sequence of video frames. No such step is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 16 essentially tracks claim 1, but in structure format, and the arguments presented as to claim 1 are incorporated herein by reference. More specifically, claim 16 requires, among other features, circuitry for dividing each video frame into a plurality of regions such that each region is representative of a portion of the object, at least one of the plurality of regions being predetermined at least one of the plurality of regions and the other of the plurality of regions being remaining ones of the plurality of regions. No such feature is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 16 further requires means for selecting the at least one of the plurality of predetermined regions from the received video data. No such feature is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 16 still further requires circuitry for recombining the regions of each of the video frames to form a display video image. No such feature is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 16 yet further requires a display for displaying the video frames of the display video image such that the selected region is formed as a sharp image, and remaining regions of the display video image are less sharp in accordance with the relative distance between the respective portion of the object and a reference point. No such feature is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

In addition, as to claim 16, the arguments presented above with reference to claim 1 apply as well.

Claims 18 to 27 and 29 depend from claim 16 and therefore define patentably over the applied references for at least the reasons presented above with reference to claim 16.

In addition, claim 18 further limit claim 16 by requiring that the means for selecting be arranged to select a region defining a foreground object. No such feature is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 19 further limits claim 16 by requiring that the means for selecting be arranged such that an observer can select a region of the monitored object. No such feature is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 20 further limits claim 16 by requiring that the means for selecting be arranged to select a region of the video frame according to the position of an object relative to at least one other object. No such feature is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 21 further limits claim 16 by requiring that the means for selecting be arranged to select a region of the video frame defining an active entity. No such feature is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 22 further limits claim 16 by requiring that the circuitry for dividing the video image into a plurality of regions be arranged for dividing the video image into a plurality of

regions each defining a focal plane. No such feature is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 23 further limits claim 22 by requiring that the circuitry for dividing the video image into a plurality of regions each defining a focal plane be arranged for dividing the video image into regions wherein each focal plane being representative of a different distance between a respective portion of the object and the reference point. No such feature is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 24 further limits claim 23 by requiring circuitry for de-emphasizing remaining regions of the display video image. No such feature is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 25 further limits claim 24 by requiring that the de-emphasising circuitry be arranged for de-emphasising remaining portions of the video image according to the distance between a respective portion of the object and the reference point. No such feature is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 26 further limits claim 25 by requiring that de-emphasising circuitry be arranged for applying greater de-emphasisation to regions of the video image that are representative of portions of the object having a greater distance between the respective portion of the object and the reference point than regions of the video image that are representative of portions of the

object having a smaller distance between the respective portion of the object and the reference point. No such feature is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

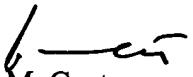
Claim 27 further limits claim 24 by requiring means for artificially generating each remaining region of the video image. No such feature is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

Claim 29 further limits claim 24 by requiring that the circuitry for generating video data comprise a video camera for monitoring an object to produce one or more video frames and the display is capable of displaying the video frame such that remaining regions of the display video image are less sharp in accordance with the relative distance between said respective portion of the object and the video camera. No such feature is taught or suggested by Omura et al., Applicant's Admitted Prior Art or any proper combination of these references either alone or in the combination as claimed.

CONCLUSIONS

For the reasons stated above, reversal of the final rejection and allowance of the claims on appeal is requested that justice be done in the premises.

Respectfully submitted,



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APPENDIX

The claims on appeal read as follows:

1. A method for generating a video image of an object comprising the steps of:

generating video data representing video frames for forming the video image of said object;

processing said video data by:

dividing each video frame into a plurality of regions, each region being representative of a portion of said object, at least one of said plurality of regions being predetermined at least one of said plurality of regions and the other of said plurality of regions being remaining ones of said plurality of regions;

selecting said predetermined at least one of said plurality of regions of the video frame;

de-emphasising said remaining ones of the plurality of regions of the video frame;

transmitting video data indicative of said selected at least predetermined one and said remaining ones of the plurality of regions of said video frames to a receiver having a display for displaying said display video image. and

recombining said regions of each of said video frames to form a display video, said recombining step comprising forming a display video image in which the selected region of the video frame is sharp or well-defined, and remaining ones of the plurality of regions of the video frame are de-emphasised or blurred in accordance with the relative distance between the portion of said object in a remaining one of the plurality of regions respective region of said object and a reference point.

3. The method as claimed in Claim 1 wherein said step of selecting said region comprises selecting a region defining a foreground object.

4. The method as claimed in Claim 1 wherein said step of selecting said region comprises an observer selecting a region of the object.

5. The method as claimed in Claim 1 wherein said step of selecting said region comprises selecting a region of said video frame according to the position of an object relative to at least one other object.

6. The method as claimed in Claim 1 wherein said step of selecting said region comprises selecting a region of said video frame defining an active entity.

7. The method as claimed in Claim 1 wherein said step of dividing said video image into a plurality of regions comprises dividing said video image into a plurality of regions each defining a focal plane.

8. The method as claimed in Claim 7, wherein the step of dividing said video image into a plurality of regions each defining a focal plane comprises dividing said video image into regions wherein each focal plane is representative of a different distance between a respective portion of said object and said reference point.

10. The method as claimed in Claim 1, wherein said step of selecting at least a predetermined one of said plurality of regions comprises de-emphasising remaining portions of said video image according to the distance between a respective portion of said object and said reference point.

11. The method as claimed in Claim 10, wherein said step of de-emphasising remaining portions of said video image comprises applying greater de-emphasisation to regions of the video image that are representative of portions of the object having a greater distance between the respective portion of said object and said reference point than regions of the video image that are representative of portions of the object having a smaller distance between the respective portion of the object and the reference point.

12. The method as claimed in Claim 1 further comprising; artificially generating each remaining region of the video image.

13. The method as claimed in ~~any preceding~~ claim 1, wherein said step of generating video data comprises monitoring an object with a video camera to produce one or more video frames.

14. The method as claimed in Claim 13, wherein the step of displaying said video image comprises displaying said video frame such that remaining regions of the display video image are less sharp in accordance with the relative distance between said respective portion of said object and said video camera.

15. The method as claimed in Claim 1 wherein said step of generating video data comprises generating a sequence of video frames, and said step of displaying said display video image comprises displaying a sequence of video frames.

16. A system for generating a video image of an object comprising;

circuitry for generating video data representing video frames for forming the video image of said object;

circuitry for dividing each video frame into a plurality of regions such that each region is representative of a portion of said object, at least one of said plurality of regions being predetermined at least one of said plurality of regions and the other of said plurality of regions being remaining ones of said plurality of regions; and

means for selecting said at least one of said plurality of predetermined regions from said received video data;

circuitry for recombining said regions of each of said video frames to form a display video image; and

a display for displaying said video frames of said display video image such that said selected region is formed as a sharp image, and remaining regions of said display video image are less sharp in accordance with the relative distance between said respective portion of said object and a reference point.

18. The system as claimed in Claim 16 wherein said means for selecting are arranged to select a region defining a foreground object.

19. The system as claimed in Claim 16 wherein said means for selecting are arranged such that an observer can select a region of the monitored object.

20. The system as claimed in Claim 16 wherein said means for selecting are arranged to select a region of said video frame according to the position of an object relative to at least one other object.

21. The system as claimed in Claim 16 wherein said means for selecting are arranged to select a region of said video frame defining an active entity.

22. The system as claimed in Claim 16 wherein said circuitry for dividing said video image into a plurality of regions is arranged for dividing said video image into a plurality of regions each defining a focal plane.

23. The system as claimed in Claim 22, wherein said circuitry for dividing said video image into a plurality of regions each defining a focal plane is arranged for dividing said video image into regions wherein each focal plane is representative of a different distance between a respective portion of said object and said reference point.

24. The system as claimed in Claim 23 further comprising; circuitry for de-emphasizing remaining regions of said display video image.

25. The system as claimed in Claim 24, wherein said de-emphasising circuitry is arranged for de-emphasising remaining portions of said video image according to the distance between a respective portion of said object and said reference point.

26. The system as claimed in Claim 25, wherein de-emphasising circuitry is arranged for applying greater de-emphasisation to regions of the video image that are representative of portions of the object having a greater distance between the respective portion of said object and said reference point than regions of the video image that are representative of portions of the object having a smaller distance between the respective portion of the object and the reference point.

27. The system as claimed in claim 24 further comprising;

means for artificially generating each remaining region of the video image.

29. The method as claimed in Claim 24 wherein the circuitry for generating video data comprises a video camera for monitoring an object to produce one or more video frames and the display is capable of displaying said video frame such that remaining regions of the display video image are less sharp in accordance with the relative distance between said respective portion of said object and said video camera.